Developing an Effective Training Program

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As required by the Process Safety Management/Risk Management Program (PSM/RMP) regulations, facilities are required to develop and implement a training program in accordance with the following regulations:

- Cal-OSHA CCR Title 8 Section 5189(g), Process Safety Management (PSM), Training;
- EPA 40 CFR Part 68.71, Risk Management Program, Training; and
- Cal-EMA CCR Chapter 4.5 Section 2760.4 California Accidental Release Prevention Program (CalARP).

The purpose of establishing a training program is to ensure that regulated substances (i.e. ammonia, chlorine, etc.) are handled in a consistent and safe manner. Basically, the goal is to have adequately trained operators handling the regulated process. An effective training program will help operators understand the nature and causes of problems arising from process operations and will increase employee awareness with respect to the hazards involved in handling the regulated substance.

Cal-OSHA CCR Title 8 Section 5189 (g) states that a training program should include:

- Initial training. Each employee presently involved in operating or maintaining a process, and each employee before working in a newly assigned process, shall be trained in an overview of the process and in the operating procedures. The training shall include emphasis on the specific safety and health hazards, procedures, and safe practices applicable to the employee's job tasks.

- Refresher and supplemental training. At least every three years, and more often if necessary, refresher and supplemental training shall be provided to each maintenance or operating employee and other workers necessary to ensure safe operation of the facility. The employer in consultation with employees involved in operation or maintenance of a process shall determine the appropriate frequency of refresher training.

- Training certification. The employer shall ensure that each employee involved in the operation or maintenance of a process has received and successfully completed training as specified by this subsection. The employer, after the initial or refresher training shall prepare a certification record which contains the identity of the employee, the date of training, and the signatures of the persons administering the training.

- Testing procedures shall be established by each employer to ensure competency in job skill levels and safe and healthy work practices.

So how should I proceed with developing an effective training program? First, let's start with the basics. All training programs must consist of three main components:

- Initial Training **[CCR Title 8, § 5189 (g)(1)]**
- Refresher Training **[CCR Title 8, § 5189 (g)(2)]**
- Documentation / Recordkeeping **[CCR Title 8, § 5189 (g)(3)&(4)]**

Let's begin with initial training for ALL employees. Upon hire, each employee at your facility should receive hazard identification and emergency response plan training, specifically on:

- Safety issues associated with the regulated chemical, including general first aid as per the MSDS (Employee's Right to Know and Hazards Communications)
- Your facility's safe work practices
- Reporting leaks
- Emergency evacuation procedures

Beyond this, specific training regarding the employee's job duties should be given when he/she is assigned to a department prior to commencing work activities. **[CCR Title 8, § 5189 (g)(1)]**

Process-Specific Training

In addition to the general hazard identification and emergency evacuation training, employees who are involved in operating and/or maintaining a regulated process should receive specific training on the process itself. It is beneficial to start the training program development process by defining your employee's job classifications or levels with respect to the regulated process (i.e. operator, technician, manager, etc.) Each classification or level can have specific tasks that require the person to have the skills, knowledge, and competencies to perform these tasks. Each classification or level can also be dependent on experience and training.

As an example, an operations or entry level employee could receive the following training:

- **Overview of the Process**: Employees should know the layout of the system, the location of the equipment and instruments, how the system operates (i.e. process flow), and the system's normal operating parameters.

- **Hazards associated with the Process**: Employees should review the MSDS for the regulated substance, as well as handling and labeling requirements. Employees should also review any recent releases or near misses. Also, inform your employees of the location and use of safety equipment, such as eyewash/safety showers.

- **Normal System Operations**: If the employee will be conducting visual inspections and completing a system log, he or she should be trained on what to look for during the inspections and how to properly fill out the log. The employee should also know the proper steps to take when he observes an irregularity with the system (e.g., system parameters are out of normal operating range or a piece of equipment is not functioning).

- **Operating and Maintenance Procedures**: Operating procedures include system start up, shut down, normal operations, emergency operations and shutdown, startup following an emergency shutdown, etc., specifically those that are included in your PSM/RMP. Examples of maintenance procedures would include line opening procedures, adding oil to equipment, and how to properly test the safety devices associated with the equipment. REMEMBER: Each employee does not need to be trained on all these procedures. They only need training on those procedures that they are required to perform.

- **Personal Protection Equipment**: Training should include requirements, limitations, maintenance, and the proper use of PPE.

- **Safe Work Practices and Programs:** Depending on the employee's job duties, additional training may be required on OSHA safety programs such as Lockout / Tagout, Confined Space, Respiratory Protection, and Hot Work. For example, if an employee is required to don a respirator to perform a specific procedure, then he would need additional training in accordance to OSHA's respiratory protection program requirements.

- **Process Safety Management (PSM) / Risk Management Program (RMP)**: A great way to train newly-hired operations level employees is to have them review the Process Safety Information, Operating Procedures, Mechanical Integrity Program, and the Process Hazard Analysis Study included in your PSM/RMP. Operational or entry level employees should also receive an overview of the PSM/RMP regulatory requirements and the other prevention programs comprising of the PSM/RMP documentation. Employees should also be trained on how to access the PSM/RMP documents. In addition, as required by the Employee Participation program of the PSM/RMP, operational level employees should participate in Process Hazard Analyses and the annual SOP reviews.

Continuing on with our example, technical or supervisor level employees who oversee the operational / entry level employees should have successfully performed at the operations / entry level. In addition, they could be responsible for:

- Implement the Process Safety Management (PSM) / Risk Management Program (RMP)
- Perform system troubleshooting
- Make important decisions regarding operating strategies, setpoints, limits
- Optimize system operations for improved cost and reliability
- Recommend system upgrades and improvements
- Perform system inspections and mechanical integrity checks
- Assist in training of operations level employees
- Schedule and perform or oversee major repairs or installations
- Coordinate shutdowns and pumpdowns
- Administer preventive and predictive maintenance systems

Technical / supervisory level employees should also be trained in the management systems included in the PSM/RMP document (*Management of Change*, *Incident Investigation*, and *Emergency Response)* as applicable to their responsibilities.

Management of Change

- Train employees involved in process operations, (including maintenance and contract employees whose job tasks will be affected by a change in the process) in changes to the process. Changes include revised operating procedures, process technology changes, process equipment changes and revised maintenance procedures.

- Train employees involved in process operations in the facility's written management of change program, including training to recognize and control subtle changes and initiate management of change procedures.

- Train employees designated to conduct management of change reviews. Designated employees need the ability to address the technical basis and the potential health and safety hazards of a proposed change.

Incident Investigation

- Train employees selected to serve on incident investigation teams in incident investigation techniques, report writing and communication of findings to operating and maintenance employees.

Emergency Planning and Response

- Before implementing the emergency action plan, designate and train employees to assist in the safe and orderly evacuation of other employees.

- Train all employees on the appropriate evacuation routes and assembly locations. Perform periodic evacuation drills. Instruct employees to refrain from attempting to rescue fellow employees in the event of a chemical release or fire.

What about emergency response training? If we choose to respond to chemical releases, what type of training should we provide to our employees? There are five main levels of emergency response training:

- First Responder, Awareness Level (FRA): **[CCR § 5192(q)(6)(A)]**
- First Responder, Operations Level (FRO): **[CCR § 5192(q)(6)(B)]**
- Hazardous Materials Technician: **[CCR § 5192(q)(6)(C)]**
- Hazardous Materials Specialist: **[CCR § 5192(q)(6)(D)]**
- Incident Commander/On-scene Manager: **[CCR § 5192(q)(6)(E)]**

We are going to focus on the First Responder Operations Level and Hazardous Materials Technician Level. Employees trained at the First Responder Operations Level are individuals who will respond to releases or potential releases of hazardous substances as part of the initial response for the purpose of protecting nearby persons, property or environment from the effects of the release. They are trained to respond in a **defensive** fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First Responders at the Operations Level shall have received at least eight hours of training OR have had sufficient experience to objectively demonstrate competency in the following areas **[CCR § 5192(q)(6)(B)]**:

- Knowledge of the basic hazard and risk assessment techniques.
- Know how to select and use proper personal protective equipment provided to the first responder operational level.
- An understanding of basic hazardous material terms.
- Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
- Know how to implement basic decontamination procedures in the case of exposure to skin, eyes, etc.
- An understanding of the relevant standard operating procedures and shut-down procedures.

All first responders at the operations level must successfully complete First Responder Operations Level training, document completion of training (test and certificate), and continue with refresher training as scheduled.

Hazardous Materials Technician Level individuals respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive **offensive** role than a first responder at the operations level in that they will approach the point of release in order to plug, patch, or otherwise stop the release of a hazardous substance.

Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas **[CCR § 5192(q)(6)(C)]**:

- Know how to implement the employer's emergency response plan.
- Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.
- Be able to function within an assigned role in the Incident Command System (ICS).
- Know how to select and use proper specialized chemical personal protective equipment.
- Understand hazard and risk assessment techniques.
- Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
- Understand and implement decontamination procedures.
- Understand termination procedures.
- Understand basic chemical and toxicological terminology and behavior.

All first responders at the technician level must successfully complete First Responder Technician Level training, document completion of training (test and certificate), and continue with refresher training as scheduled.

So how often do we need to re-train our employees? **[CCR Title 8, § 5189 (g)(2)]** Refresher training involves periodic training on the procedures and policies outlined above in the initial training. Refresher training is designed to increase employee awareness with respect to the hazards specific to the employees job duties and to reduce injuries. All employees should receive regular safety training including periodic evacuation training (drills) and annual hazards communication (i.e. awareness) training.

Separately, refresher training for employees involved with operating and/or maintaining the regulated process should include the following:

- Reviewing items covered in initial training
- Reviewing all accidents or near misses associated with the system
- When new process equipment are installed or when there is a change in process parameters or procedures

Training specific to operators/maintenance employees should be performed as needed but at a minimum every three years.

What type of documentation do I need to maintain? **[CCR Title 8, § 5189 (g)(3)]** Documentation and certification of training participation is required for all employees. Documentation should be maintained on the training for all employees, including contractors, in the employee's personnel file. Initial and refresher training records should include the identity of the employee and the date of training. Training records should also include an employee sign-off, stating that he/she has received and understood the training provided. Finally, documentation should include the means used to verify that the training was understood. Examples would include administering a written test, demonstrating a procedure, or orally answering questions posed by the instructor. **[CCR Title 8, § 5189 (g)(4)]** Based on the outcome of the testing/demonstration, the trainer can sign off on the employee's training, certifying they are qualified to begin working.

What about the contractors who work on our system? Do we need to train them as well? **[CCR § 5189(h)(4)]** OSHA's definition of a contractor is someone performing maintenance or repair, renovation, or specialty work on or adjacent to a process utilizing hazardous chemicals (e.g., ammonia, chlorine, sulfur dioxide, flammables, etc.). It does not apply to janitorial or other supply services other than those actually delivering the hazardous materials. Based on this definition, this includes not only maintenance contractors that work directly on the process, but also electricians, insulators, painters, etc.

Contractor training is a little different from employee training. Technically, they are not your employees, however, it is your responsibility to ensure that they are qualified to work on your system. **[CCR § 5189(h)(1)]** You can require your contractor to submit a statement that all contract employees that work on your system have received the necessary training. You can also

go as far as requiring contractors to have a technical certification and submitting copies of those certifications. A large amount of responsibility on the contractor; however, it is ultimately your responsibility to maintain a safe work environment for your employees. You must ensure that the training provided to contractor employees by the contractor employer is equivalent to the training required for direct hire employees. **[CCR § 5189(h)]**

Additionally, you should train your contractors on your facility's safety policies and rules (i.e. quality measures they need to adhere to while working at your facility, whom they should contact when they arrive onsite, etc.). **[CCR § 5189(h)(3)]** You also need to inform them of potential fire, explosion, or toxic release hazards related to their work. Finally, you need to provide them with your emergency action/response plan and any safety programs they need to follow while working at your facility according to your Contractor Safety program. **[CCR § 5189(h)(1)]**

This can be completed by providing the contractor with an information package. In addition to providing your contractor with facility-specific information and the specific maintenance forms dictated by your PSM program, consider including your contractor in the following exercises:

- Annual Operating Procedures Review Sessions **[CCR § 5189(f)(3)]**
- Recommendation Review Meetings **[CCR § 5189(e)(4)]**
- Three-Year Compliance Audits **[CCR § 5189(o)(1)]**
- Process Hazard Analysis Revalidation Sessions **[CCR § 5189(e)(5)]**
- Annual Evacuation Drills / Hazard Communication Training **[CCR § 5189(n)]**

Finally, how do I ensure that the training program is effective? To ensure the training program is accomplishing its goals, periodically evaluate the training program. This evaluation will help you to identify unsafe working conditions or practices. The inspection should include the following:

- Name of person conducting the inspection and date
- Observed unsafe conditions or work practices
- Actions needed to correct these conditions
- Employees observed to be incompetent

If you determine, through periodic evaluation, that there are deficiencies, then increase the refresher training frequency.

When you have an effective training program, you will have increased employee awareness with respect to the hazards involved in handling regulated substances. Operators will also understand the system better, as well as the nature and causes of problems arising from process operations and ways to address/avoid those problems. When your training program works, you will minimize the likelihood of an industrial accident and further ensure the safety of your employees.

While the training section of PSM appears straightforward with only four items as listed earlier, many of the PSM/RMP program elements specifically mention "training". Further investigation into each PSM element reveals that "training" is a key component throughout the standard. This is illustrated in Figure 1. Therefore remember that an effective training program will include all aspects of your PSM/RMP program.

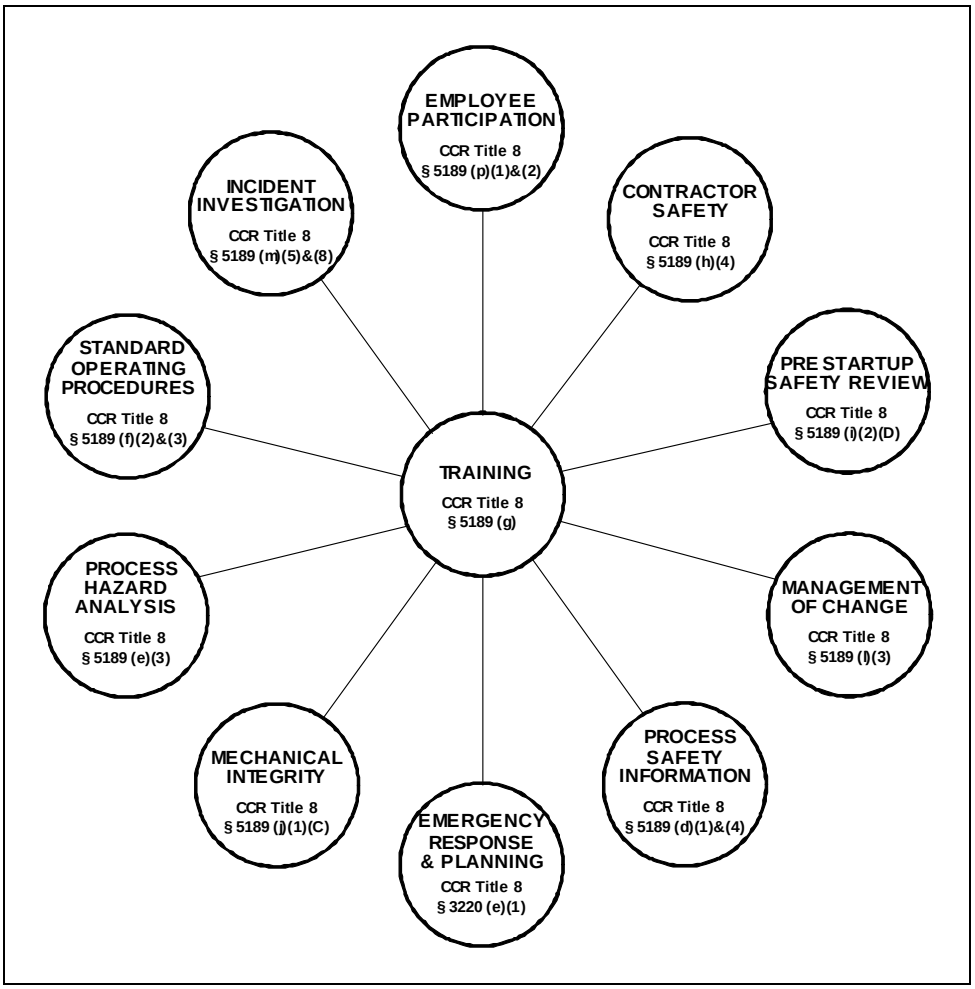

Figure 1